

Application No. 10/784,751
Attorney Docket No. 13DV-14085 (07783-0113-01)

C.) AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings of claims in the Application.

1. (currently amended) An improved ceramic matrix composite laminate comprising:
 - a plurality of preform lamina, each of the preform lamina being formed of directional continuous ~~fiber~~ ceramic fiber in a ceramic matrix;
 - a dry, porous layer of nonwoven mat including a plurality of chopped ceramic fibers ~~in a ceramic matrix~~, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and
 - a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.
2. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven chopped fiber mat prior to being interposed between adjacent continuous fiber preform lamina of the at least two preform lamina is from about 0.001 inches to about 0.25 inches thick.
3. (original) The ceramic matrix composite laminate of claim 2 wherein the nonwoven chopped fiber mat after being interposed between adjacent continuous fiber preform lamina of the at least two preform lamina is from about 0.001 inches to about 0.002 inches thick.
4. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of randomly oriented chopped fibers.
5. (original) The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are less than about one inch in length.
6. (original) The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are ceramic fibers.

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7. (original) The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are a plurality of ceramic fiber compositions.
8. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the number of inter-laminar voids.
9. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the size of inter-laminar voids.
10. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the volume fraction of inter-laminar voids.
11. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina uniformly distributes the inter-laminar voids.
12. (original) The ceramic matrix composite laminate of claim 1 wherein porosity of the nonwoven mat is from about 50 percent to about 90 percent.
13. (original) The ceramic matrix composite laminate of claim 1 wherein porosity of the nonwoven mat is from about 80 percent to about 90 percent.
14. (original) The ceramic matrix composite laminate of claim 1 wherein the chopped ceramic fibers are from about 0.0004 inches to about 0.0008 inches in diameter.
15. (original) The ceramic matrix composite laminate of claim 1 wherein the chopped ceramic fibers are comprised of SiC.
16. (original) The ceramic matrix composite laminate of claim 1 wherein the ceramic matrix is comprised of SiC.
17. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of different ceramic fiber materials.

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18. (original) The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of a different material than the plurality of continuous fiber preform lamina.
19. (original) The ceramic matrix composite laminate of claim 1 wherein a plurality of layers of the nonwoven mat is interposed between at least one adjacent continuous fiber preform lamina of the plurality of continuous fiber preform lamina.
20. (original) The ceramic matrix composite laminate of claim 19 wherein at least one layer of the plurality of layers of the nonwoven mat is comprised of a different material than the remaining layers of the plurality of layers of the nonwoven mat.
- 21.-27. (canceled)
28. (new) An improved ceramic matrix composite laminate comprising:
- a plurality of preform lamina, each of the preform lamina being formed of directional continuous ceramic fiber in a ceramic matrix;
 - a dry, porous layer of nonwoven mat including a plurality of randomly oriented chopped ceramic fibers, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and
 - a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.
29. (new) The ceramic matrix composite laminate of claim 27 wherein the chopped fibers are less than about one inch in length.
30. (new) The ceramic matrix composite laminate of claim 27 wherein the chopped fibers are ceramic fibers.
31. (new) The ceramic matrix composite laminate of claim 27 wherein the chopped fibers are a plurality of ceramic fiber compositions.